

109# P-287A



National Transportation Safety Board

Washington, D.C. 20594
Safety Recommendation

Date: September 2, 1987

In reply refer to: P-87-39

Mr. Robert Arquilla
President
Alpha Construction Company
1340 West 171st Street
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A new water main was being installed along 14th Street in Chicago Heights, Illinois by the Alpha Construction Company (contractor). Before the work was begun the Northern Illinois Gas Company marked the location of its service lines and mains. On the morning of March 13, 1986, while excavating east of the marked service line for 204 14th Street, the contractor's crew snagged a gas service line with a backhoe. Because this gas service line was approximately 4 feet away from the mark and because of the line's deteriorated condition, the contractor's crew assumed correctly that it was abandoned and used it as an indication that they were near the area of the active service line. The foreman instructed the backhoe operator to take off the "frost" using the backhoe, in preparation for excavating by hand digging. Shortly thereafter, about 7:30 a.m., the backhoe snagged the active, wrapped, 3/4-inch steel natural gas service line for 204 14th Street. The line was operating at 28 psig and was 30 inches below the surface. According to the foreman, the crew could smell gas but they did not observe any blowing gas around the snagged service line. The foreman radioed his office and reported the leak. At 7:37 a.m. the office personnel called the Northern Illinois Gas Company (gas company) and informed the gas company of the accident but received no instructions from it. The gas company's call record showed that there was a line hit reported at Route 30 (14th Street) and Garden. The record had the following handwritten note, "Hit line-Don't know if blowing"; however, the record was stamped "LEAK." 1/

The gas company did not know whether a main or a service line had been struck when it dispatched crews at 7:42 a.m. Since the report only gave the street and cross street of the accident, the dispatched crews assumed that a main line had been damaged. When questioned later, the crewmembers stated that they thought they were responding to an emergency situation. According to gas company officials, all leaks are treated as emergency situations.

When the gas company crew arrived about 7:50 a.m., they saw two contractor crews working on opposite sides of the street. Unable to determine which crew had hit the line, the gas company crew went to the site with the largest backhoe; however, after talking

1/ For more detailed information, read Pipeline Accident/Incident Summary Report—"Chicago Heights, Illinois, March 13, 1986," (NTSB/PAR-87/01/SUM).

with the laborers they found out this was not the correct site. The gas company crew took a few minutes to cross 14th Street due to heavy traffic, but on arrival they quickly determined that it was a service line that was damaged. The lead man of the gas company crew went to the house at 204 14th Street and closed the gas valve at the meter. When interviewed, the gas crew stated that there was no odor or only a slight odor of gas in the area. However, just as the lead man finished closing the valve about 8 a.m, the house exploded and began to burn; one of the two persons inside this house was killed and the other was injured. Two neighboring houses were damaged, and one gas company employee, two construction crew members, and four persons in the general area were injured by the explosion and subsequent fire. Although gas company personnel arrived on the scene approximately 10 minutes before the explosion and shut off the gas at the meter, neither they nor the contractor's crew had made an effort to warn or evacuate the residents of the house.

Additional gas company employees who arrived on the scene following the explosion reported it to their dispatcher and requested the fire department and an ambulance. The gas company crews continued their attempts to shut off the gas by digging over the service line near the house, but they were forced to withdraw due to the intensity of the fire. The gas was finally shut off about 8:45 a.m. after they dug through the asphalt at the intersection of 14th Street and Campbell and inserted a stopper ^{2/} into the main. A fire that had been burning in the area of the meter stopped burning at this time. After the gas was shut off, the gas company performed a leak survey of the area to check for migration of the gas and to determine if any of its facilities had been damaged by the explosion. The only area where gas was found was near the service line for 194 14th Street which was two houses east of the site of the explosion.

Excavation after the accident revealed that the service line for 204 14th Street was fitted with a compression coupling near the service riser located at the northeast corner of the basement of the house. The backhoe pulled the pipe from this coupling. Measurements indicate that the pipe had been moved 4 1/4 inches away from its pre-accident position on the street side of the coupling and 1 3/8 inches away on the house side. The service line had separated 1 1/4 inches on the street side but was still connected to the coupling on the house side. The walls of the basement were masonry and had several cracks any of which could have served as a path for the gas to enter the basement of the house.

On July 5, 1985, before the start of this construction project, a preconstruction meeting was held to provide all involved parties with an opportunity to protect their interests. Both the contractor and the gas company were present at this meeting. While the gas company did not state any specific cautions or concerns at the meeting, there was a general utilities caution given to the contractor to use the one-call system before excavating. Also, the contract for the project contained a section charging the contractor to take "all necessary precautions" for the safety of utility facilities. When questioned about special instructions received when working near gas facilities, the contractor's general manager replied that it was the contractor's practice to hand dig when the excavation was within 18 inches of the indicated line. The gas company reported that it requests contractors to hand dig when they are within 2 feet of a marked line. As a part of its "Guidelines for Uniform Temporary Markings of Underground Facilities," the American Public Works Association recommends that hand digging take place within a tolerance zone of 18 inches to either side of a marked utility line. Since the line in this instance was well marked, was 30 inches below the surface, and was hit by

2/ A rubber plug inserted into the pipe to stop the flow of gas.

the backhoe, it is apparent that the contractor's crew was not following any of the above practices or policies. The Safety Board believes that the contractor should stress to its employees the importance of hand digging when excavating adjacent to gas pipelines to provide reasonable safety for themselves and for the public.

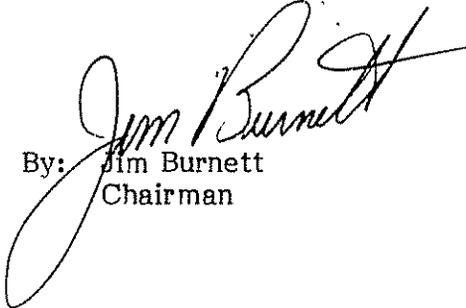
Therefore, the National Transportation Safety Board recommends that the Alpha Construction Company:

Emphasize to its employees the importance of hand digging when excavating near gas and other utility lines. (Class II, Priority Action)
(P-87-39)

Also, as a result of its investigation the Safety Board issued Safety Recommendations P-87-35 through -38 to the Northern Illinois Gas Company.

The National Transportation Safety Board is an independent Federal agency with the statutory responsibility ". . . to promote transportation safety by conducting independent accident investigations and by formulating safety improvement recommendations" (Public Law 93-633). The Safety Board is vitally interested in any actions taken as a result of its safety recommendations and would appreciate a response from you regarding action taken or contemplated with respect to the recommendation in this letter. Please refer to Safety Recommendation P-87-39 in your reply.

BURNETT, Chairman, GOLDMAN, Vice Chairman, and LAUBER, NALL, and KOLSTAD, Members, concurred in this recommendation.


By: Jim Burnett
Chairman